

or a variant thereof which binds DNA ligase IV or DNA-PK<sub>CS</sub>/Ku, a substance which comprises one or more components selected from the group consisting of DNA ligase IV or a peptide fragment of DNA ligase IV or a variant thereof which binds XRCC4 and DNA-PK<sub>CS</sub>/Ku or a peptide fragment of DNA-PK<sub>CS</sub>/Ku or a variant thereof which binds XRCC4;

and a test compound under conditions wherein, in the absence of said test compound being an inhibitor of binding between said substances, said substances bind; and

(ii) determining binding between said substances, reduction or abolition in binding between said substances being indicative of said test compound being an agent which modulates binding between XRCC4 and DNA ligase IV, or XRCC4 and DNA-PK<sub>CS</sub>/Ku or XRCC4, DNA ligase IV and DNA-PK<sub>CS</sub>/Ku.

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2. (Amended) An assay method for an agent which modulates binding between XRCC4 and DNA ligase IV or XRCC4 and DNA-PK<sub>CS</sub>/Ku, or XRCC4, DNA ligase IV and DNA-PK<sub>CS</sub>/Ku, the method comprising the steps of:

(i) bringing into contact a substance which comprises XRCC4 or a peptide fragment of XRCC4 which binds DNA ligase IV or DNA-PK<sub>CS</sub>/Ku, or a variant thereof which binds DNA ligase IV or DNA-PK<sub>CS</sub>/Ku, or which comprises DNA ligase IV or DNA-PK<sub>CS</sub>/Ku or a peptide fragment of DNA ligase IV or DNA-PK<sub>CS</sub>/Ku which binds XRCC4, or a variant thereof which binds XRCC4, and a test compound; and,

(ii) determining binding between said substance and said test compound,

binding between said substance and said test compound being indicative of said test compound being an agent which modulates binding between XRCC4 and DNA ligase IV or XRCC4 and DNA-PK<sub>CS</sub>/Ku or XRCC4, DNA ligase IV and DNA-PK<sub>CS</sub>/Ku.

3. (Amended) An assay method for an agent which modulates DNA ligase IV activity, the method including the steps of:

(i) bringing into contact DNA ligase IV and a test compound; and

(ii) determining DNA ligase activity in the presence and absence of test compound,

a difference in activity in the presence relative to the absence of test compound being indicative of said test compound being an agent which modulates the activity of DNA ligase IV.

5. (Amended) An assay method according to Claim 4 wherein the activity of DNA ligase is determined by determining adenylation or labelling of said ligase using ATP or an ATP analogue or by determining end-joining of strands of DNA or DNA analogues.

6. (Amended) An assay method including

(i) bringing into contact a substance which includes DNA-PKcs/Ku or a peptide fragment of DNA-PKcs/Ku or variant thereof which phosphorylates XRCC4, a substance which includes XRCC4 or a peptide fragment of XRCC4 or a variant thereof including a site phosphorylated by DNA-PKcs, and a test compound; and

(ii) determining phosphorylation at said site in the presence and absence of test compound a difference in phosphorylation in the presence relative to the absence of test compound being indicative of said test compound being an agent which modulates the phosphorylation of XRCC4 by DNA-PKcs/Ku.

19. (Amended) A method comprising obtaining an agent able to modulate the binding between XRCC4 and DNA ligase IV, or XRCC4 and DNA-PKcs/Ku, or XRCC4 and DNA ligase IV and DNA-PKcs/Ku, employing a method according to claim 1 or claim 2; and, formulating said agent into a composition including a pharmaceutically acceptable excipient.

22. (Amended) A method comprising obtaining an agent which modulates DNA ligase IV activity employing a method according to any Claim 3 and formulating said agent into a composition including a pharmaceutically acceptable excipient.

25. (Amended) A method comprising obtaining an agent which modulates DNA-PKcs/Ku phosphorylation of XRCC4 employing a method according to claim 6 and formulating said agent into a composition including a pharmaceutically acceptable excipient.